PIC Coupling Technology

by vario-optics ag

Technology Note

Photonic Chip Coupling with Planar Waveguides

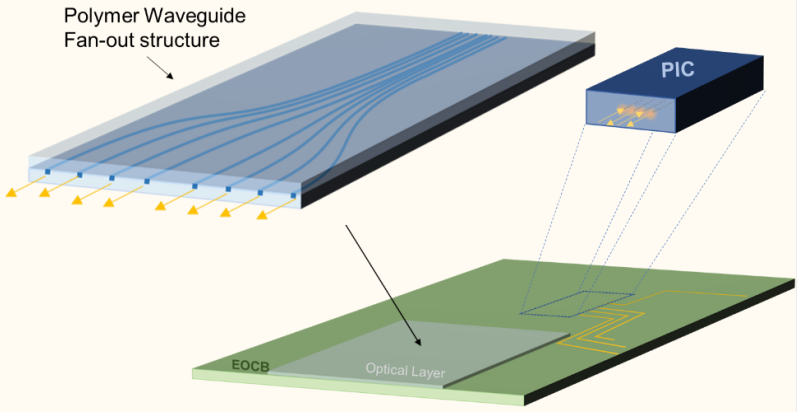
Polymer waveguides are an efficient way to optically couple a PIC to a fiber array or to another chip. Within our EOCB chip-packaging platform, we use different optical coupling schemes between PICs and polymer waveguides.

Customized optical fan-outs with multiple parallel channels are manufactured using vario-optics polymer waveguide technology.

The optical interface to the PICs can be done in two ways:

- **adiabatic-coupling** or
- **edge-coupling**

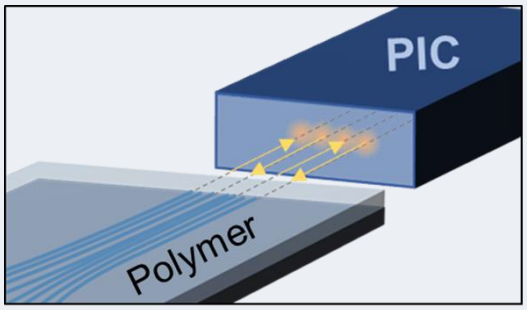
By working together with common foundries for SiPh or InP chips, we make sure our technology is compatible with standard PIC processes.

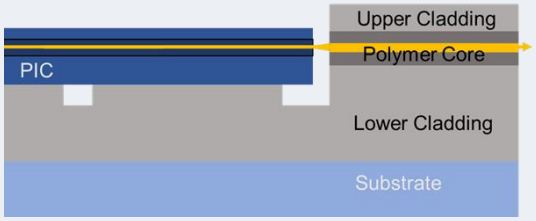


Chip-Packaging Platform

Edge-Coupling:

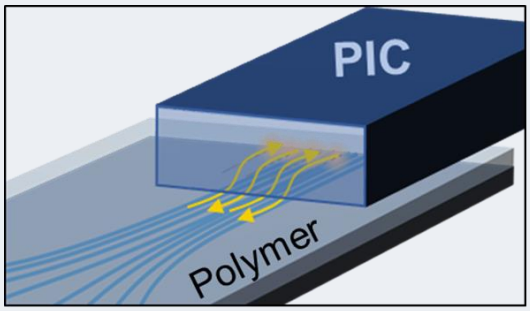
Precise alignment of the PIC- and polymer waveguide end facets. Supporting structures and assembly features ensure precise alignment.





Adiabatic-Coupling:

Evanescent coupling via direct contact of tapered Si-waveguides with polymer-waveguide cores; low insertion loss < 1 dB; relaxed assembly tolerance +/- 2µm;



Specifications	
Wavelength	*optimized for 1310 nm & 1550 nm*
Modefield Diameter (Polymer Waveguide)	*3-10 µm*
Supported chip-type	*InP, SiPh, others on request*
Port density (on PIC)	*> 30 µm pitch*
Number of parallel channels	*> 8 per side*

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